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ELEVATED BLOOD PRESSURE DURING EXERCISE IS ASSOCIATED WITH CEREBRAL WHITE MATTER LESIONS ESPECIALLY IN NORMOTENSIVE SUBJECTS

Poster Contributions
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Background: Cerebral white matter lesions (WMLs) are regarded to be subclinical ischemic changes of the cerebral parenchyma and associated with greater risk of stroke, depression and dementia. Many previous studies have shown that baseline blood pressure (BP) is one of the most important factors for WMLs, but the relation between exercise BP and WMLs has not been fully evaluated. So, we sought to investigate the relationships between cerebral WMLs and peak exercise BP.

Methods: Brain magnetic resonance imaging (MRI) scan and treadmill testing were performed simultaneously in 106 consecutive subjects (mean age, 52 years; 72 men and 34 women) without history of stroke or transient ischemic stroke.

Results: Among 106 subjects, 32 individuals (30%) presented WMLs on brain MRI. There were no significant differences in clinical or laboratory characteristics between the subjects with and without WMLs, with the exception of age, baseline systolic BP and pulse pressure. Individuals with WMLs were older (58±8 vs 49±10 years, $p<0.01$) than those without WMLs, and baseline systolic BP (132 ± 10 vs 121 ± 14 mmHg, $p<0.01$) and pulse pressure (50 ± 7 vs 46 ± 6 mmHg, $p=0.01$) were higher in subjects with WMLs. During treadmill test, peak exercise systolic BP was significantly elevated in subjects with WMLs (178 ± 22 vs 159 ± 24 mmHg, $p<0.01$). In multivariable logistic regression analysis, elevated baseline systolic BP, not peak exercise systolic BP, was associated with the presence of WMLs, independently of age as reported in previous studies. However, in multivariable logistic regression analysis of 76 normotensive subjects who had the normal range of baseline BP without history of hypertension, elevated peak systolic BP during exercise was the only predictor for the presence of WMLs.

Conclusion: Elevated peak systolic BP during exercise is significantly related with WMLs, subclinical small vessel disease of brain, especially in normotensive subjects.